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## To Drain or Not to Drain How the Periodic Drain Cycle Works

All the SK isothermal (hot steam) humidifiers are equipped with a microprocessor that regulates the **periodic** drain cycle to reduce the concentration of TDS (total dissolved solids) inside the evaporation chamber of the humidifier. This allows for a smooth operation and an efficient steam output. The factory setting of the drain cycle is set to minimize the amount of scale accumulation (example: every 4 hours of operation for the SK300). This setting is field adjustable from 1 to 24 hours. The drain frequency should be correlated to the quality of the supplied water (higher the TDS value, more frequent the unit should drain).

Since the local water conditions (TDS value, total dissolved solid) varies from one area to another, it could be difficult to suggest to a customer the appropriate setting for the frequency of the drain cycle. In this situation, we recommend using the default setting to minimize the scale build-up inside the evaporation chamber.

**Foaming cycle:** This message will appear on the LCD screen of the humidifier when the foam sensor has detected the presence of foam inside the evaporation chamber. Foam occurs when the level of dissolved solids has reached an excess concentration. A layer of foam will form on the surface of the water which prevents the steam from leaving the evaporation chamber. The foaming cycle consists of a drain cycle to flush away the minerals and to replenish with clean water. To prevent this occurrence, it is recommended to reduce the time between the drain cycles.

For laboratory and clean room applications, the humidifiers are often supplied with reverse osmosis (RO) water or deionized (DI) water (TDS value of less than 10ppm). For these types of water, it is possible to extend the period of steam production without a drain cycle or to disable the drain cycle entirely. Very clean water allows the humidifier to operate continuously without a flush cycle which allows a close control of the relative humidity. Note: The foam sensor is considered as safety feature, it cannot be disabled even when the automatic drain cycle is turned off.

For similar applications that require close control but do not have treated water (RO /DI system), the Neptronic SK300 has a solution that allows the humidifier to keep

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producing steam without interruption. This Water Dilute program is a standard feature on all SK300 series (standard version, without BACnet). When this feature is enabled in the programming mode, it will allow the humidifier to drain and supply small quantities of water without interrupting the boiling process on a more frequent basis.



In the near future, the new program for our SK humidifiers will include a 7 day schedule which will allow the user to set the drain cycles at specific hours during the day. This feature is useful for applications (production period, testing lab, hot yoga class, etc.) that require constant production of steam during a specific period of the day.

**Useful information:**

During a drain cycle the humidifier will drain at a rate of 7 gpm.

See below for the total amount of water (approximation) drained during an automatic drain cycle for the SK300 series.

Model number	Drain cycle time	Amount of water drained (*)
SK302 to 306	5 minutes	8.5 gallons
SK310 to 330	5 minutes	12.5 gallons
SK340 to 360	7 minutes	19.5 gallons
SK370 to 390	11 minutes	30 gallons

(\*) These quantities are dependent of the water inlet pressure.